



City Research Online

City, University of London Institutional Repository

Citation: Khudair, A. & Bawden, D. (2007). Healthcare libraries in Saudi Arabia: Analysis and recommendations. *Aslib Proceedings*, 59(4-5), pp. 328-341. doi: 10.1108/00012530710817555

This is the unspecified version of the paper.

This version of the publication may differ from the final published version.

Permanent repository link: <https://openaccess.city.ac.uk/id/eprint/3159/>

Link to published version: <https://doi.org/10.1108/00012530710817555>

Copyright: City Research Online aims to make research outputs of City, University of London available to a wider audience. Copyright and Moral Rights remain with the author(s) and/or copyright holders. URLs from City Research Online may be freely distributed and linked to.

Reuse: Copies of full items can be used for personal research or study, educational, or not-for-profit purposes without prior permission or charge. Provided that the authors, title and full bibliographic details are credited, a hyperlink and/or URL is given for the original metadata page and the content is not changed in any way.

Healthcare libraries in Saudi Arabia: analysis and recommendations

Ahmad Khudair

Department of Information Science, King Saud University, PO Box 2456, Riyadh 11451, Saudi Arabia

David Bawden

Department of Information Science, City University London, Northampton Square, London, UK
db@soi.city.ac.uk

Abstract

Purpose - To gain a detailed understanding of the current health library/information environment in Saudi Arabia; to identify problems, issues, and areas for improvement; to make recommendations for improvement, and to instantiate these in models and prototypes.

Design/methodology/approach - A mixed method empirical approach is used in 11 health libraries, including literature survey, institutional profiling, questionnaire, interviews, non-participant observation, and examination of documents. A model for supporting change management in Saudi health libraries is proposed, and a prototype for a Saudi Health Information Network is developed.

Findings - The healthcare libraries are well-used, and appreciated by their users, and the staff are generally satisfied with their work. Problems and issues are identified: use of ICTs and digital resources; lack of proactive information services; education, training and CPD for health library work; limited strategic planning and policy for these services. Recommendations are made for improvements.

Research limitations - The empirical research is limited to health sciences libraries in Riyadh, the capital of Saudi Arabia. The prototype health information network has not been evaluated by users.

Practical implications - Recommendations are made to enable the government of Saudi Arabia and its various agencies to support improvements in the existing health sciences libraries and information provision.

Originality/value - Detailed study of the health library environment in Saudi Arabia, illustrating factors typical of the situation in many other countries. Novel organisational change model, and prototype national health information network.

Keywords Healthcare libraries, Healthcare information provision, Saudi Arabia, Continuing professional development, Change management

Paper type Research paper

Introduction and aims of the study

The aim of this study was to explore the state of health sciences libraries in Riyadh, the capital city of Saudi Arabia, to investigate their strengths and weaknesses, particularly with respect to information service provision and use of information and communication technologies (ICTs), and to make recommendations for future developments.

This study has been reported in a PhD thesis (Khudair, 2005), which should be consulted for fuller details.

The more specific objectives of the study were:

- To explore the current state of health sciences libraries in Riyadh.
- To determine the adequacy or otherwise of the health sciences libraries' resources, services, and co-operative activities in Riyadh.
- To identify the health professionals' information needs, the information sources used by them, the adequacy of those sources, and the difficulties faced in acquiring information.
- To explore the perception of health professionals towards information provision and the use of information and communication technologies in health sciences libraries.
- To explore the condition of the health library profession in Saudi Arabia, and the need for programmes of training and professional development.
- To develop an organisational model for improvement of health sciences library practice and information provision and to make appropriate recommendations based on this.

Background: healthcare libraries in Saudi Arabia

Historically, health sciences libraries in Saudi Arabia were founded concurrently with the foundation of medical teaching programmes and modern hospitals in major cities. The number of health sciences libraries is increasing with the establishment of new hospitals and universities around the country, the period of major growth being the 1970s (Khudair, 2005).

A number of studies have been published into the various aspects of the Saudi health library system (see, for example, AbuOuf, 1995; Al-Ogla, 1998; Alshaya, 2002; Al-Zahrani, 2002; Arif, 1998; Aseel, 1996; and others quoted in Khudair, 2005).

These studies point to a number of issues and constraints in the Saudi healthcare library system:

- a poor information infrastructure, with limited ICT access;
- the lack of a national strategic plan for health information;
- relatively little effective use of ICTs, with continued reliance of traditional manual methods, and “pen on paper”;
- limited understanding of ICTs among health professionals and health library staff;
- reliance in many hospital libraries on a basic set of resources.

In recent years, there has been a very real concern about the implication of the adoption of various kinds of electronic information services into health sciences libraries. Therefore, the infrastructure of these libraries is becoming a collection of multiple technologies, including online databases, CD-ROMs, Internet, etc. However, the weakness of libraries is that generally they have grown up without being carefully planned to fit in with existing facilities and the information and communication technology infrastructure. Moreover, their development has been ad hoc, without

proper planning or co-operation with neighbouring libraries (Arif, 1998). This situation has been influenced by the growth and conditions of the parent hospitals and health organisations in the country. Little coordination exists among health provider agencies in Saudi Arabia. Facility and equipment planning in one sector rarely takes the resources of another sector into account, and even within a sector joint use of resources is not widely practised. Duplication of resources and services is the direct result of lack of coordination between provider agencies, and contributes to the escalating cost of health services in the Kingdom.

AlShaya (2002) found two major problems, mainly: the lack of information sources provided by health libraries in Riyadh to physicians, and inadequate information education for physicians. AlShaya recommended extending physicians' access to electronic information sources, and enhancing information education opportunities for physicians, so they can learn to use IT and electronic information sources. He found several environmental factors can make quite large differences to the physicians' use of new technologies such as availability and accessibility of electronic information services, status of physicians, and information searching skills and training. AlShaya saw it as essential to develop and implement national policies and guidelines for the provision of electronic information services in hospital libraries in Saudi Arabia.

This was the background to the study reported here. It was focused on eleven healthcare libraries in Riyadh, the capital city of Saudi Arabia. These were:

- King Faisal Specialist Hospital and Research Centre
- King AbdulAziz City of Medicine
- King Khalid University Hospital
- King Khalid Specialist Eye Hospital
- King Abdulaziz University Hospital and College of Dentistry
- Riyadh Armed Forces Hospital
- Security Forces Hospital
- Yamamah Hospital
- Sulaimanyah Children's Hospital
- Saudi Centre for Organ Transplants
- Al-Iman General Hospital

Study methods

The study used six separate data gathering methods: a literature review; a profiling of libraries and library staff; a questionnaire analysis of library users and use; interviews with library staff; observation of activities and interactions within the libraries; and analysis of documents. This mixed approach, which blended quantitative and qualitative data collection and analysis, was designed to give the richest picture of the situation (Khudair, 2005).

Literature review

The review aimed at identifying literature relevant to healthcare information generally, with a particular emphasis on material relevant to the situation of Saudi Arabia. In addition to searches of bibliographic databases, and library collections in the UK, material available locally in Riyadh and Jeddah (Saudi Arabia) and Cairo (Egypt) was consulted. Electronic mailing lists and discussion forums covering the

relevant topics and regions were also scanned. The results were analysed and fed into the subsequent design of the study (Khudair, 2005).

Profiling

A “fact sheet” was drawn up to provide a profile of all the staff working in the Riyadh health libraries, including basic personal information (nationality, academic qualifications, etc.) together with job descriptions, work experience, professional activities, etc. This gave an initial “picture” of the library staff.

There was a lack of background information about the libraries themselves, for example, contact information, electronic and printed resources, staff, services, and even such basic facts as the number of hospitals that actually have a health sciences library in Riyadh. A directory was therefore created for all the libraries in this study including this baseline information, and as the starting point for a full national directory.

Questionnaires

The questionnaire designed for this research was for health professionals working in governmental hospitals in Riyadh. Its main purpose was to gather both quantitative and qualitative data, and to gain an accurate knowledge of present activities in health sciences libraries in Riyadh. In addition, the questionnaire focused on the level of user satisfaction as it related to health libraries and information services.

The questionnaire was designed, so far as possible, to build on other studies carried out in the Saudi health library system, by using similar questions (Khudair, 2005). An initial version was tested in two hospital libraries, with a further pre-test in five hospital libraries.

The final questionnaire contained 44 questions, 5 sections:

- personal information; user views of the library;
- training received and training needs;
- reasons for information seeking, type of information resources preferred, adequacy of information services;
- future prospects and problems in information provision.

Questionnaires were distributed to randomly selected health professionals within randomly selected departments of the 11 hospitals in the study; 845 questionnaires were distributed, of which 493 were returned correctly completed, a response rate of 58 per cent.

Interviews

A total of 22 interviews were carried out with health library workers, out of a total of 37 persons working in 10 of the 11 libraries in the study (the remaining library had no designated staff at the time of the study). The interviews were unstructured, and took the form of an “informal conversation interview”, since most of the interviewees did not feel comfortable with structured or recorded interviews.

The Informal Conversational Interview is a type of interview that may occur spontaneously in the course of field work, and the respondent may not know that an

"interview" is taking place (Sewell, 2002). Questions emerge from the immediate context, so the wording of questions and even the topics are not predetermined. The major advantage is that the interview is highly individualised and relevant to the individual, and likely to produce information or insights that the interviewer could not have anticipated. The time taken with these interviews varied, depending on the mood of the staff and time available.

The interviews generally highlighted the following topics:

- Co-operation between Saudi health libraries in Riyadh and with other libraries in the country.
- Needs, expectations and developments related to the health libraries in Riyadh.
- Challenges encountered by health sciences librarians.
- Type of planning required, especially for electronic information services in the libraries.
- Role of health information professionals in developing and delivering information services.
- Role and position of the libraries and health information professionals within the health care environment.

Observation

Repeated non-participant observations were carried out in the libraries studied (participant observation was considered, but was not feasible due to time constraints, and to the restrictions imposed in some library settings). The main factors examined were:

- the physical environment within the health libraries;
- the human, social environment, including the ways in which health information professionals and health professionals interact and behave towards each other;
- the implementation of services and facilities;
- health professionals' interactions with services and resources;
- the role of health information professionals in the libraries as service providers.

This provided a better understanding of the context of the questionnaire and survey responses.

Document analysis

As wide a range as possible of library documentation - including library reports and plans, health ministry reports and plans, job descriptions, and service guides - were analysed, to provide complementary information to that gathered by other means.

Study results

The results are described and analysed fully by Khudair (2005), and only a summary of the main points is given here, organised into four sections: libraries, staff, users, usage; education and training; information services; information and communication technologies.

Libraries, staff, users, usage

Staff numbers in the libraries surveyed varied between 1 and 7, with one library awaiting the appointment of a librarian. Seventeen were regarded as professional level staff, and 20 as para-professional.

A majority of library staff were not educated to university degree level, only half had any library/information qualification, and only one person had had any training in health information topics. All relied on substantial work experience to support their professionalism, given the limited impact of LIS formal education, and the lack of any continuing professional development (CPD) opportunities. Most were satisfied with their working environment, but had concerns about lack of facilities, training opportunities, their role and status (and consequent lack of input into decision making processes), and the lack of strategic policies and plans.

The largest groups of users, as might be expected, were physicians (39%) and nurses (24%); other users included pharmacists, paramedics, technicians and administrators. Over 8 per cent of users were educated to Bachelors' degree or equivalent. The health sciences library was the first choice for seeking information (45%), although 26 per cent relied on online searching. Use was mainly for "traditional" purposes of reading library material (40%), borrowing printed items (25%) and literature searching (18%), with 92 per cent of interaction being by a personal visit to the library. Difficulties with use of the library reflected this, with the main issue being opening hours, with an additional requirement, particular to the local culture, for better facilities for female users.

Almost all services of the libraries are provided only to staff of the parent institutions, though two allow external users. Co-operation with other libraries is almost entirely dependent on personal efforts and contacts.

Only half of the libraries had automated systems, the remainder relying on card catalogues. All provided computer facilities, but two had no Internet connectivity. There was very limited use of web services, and four had no e-journal access. Only two libraries provided any active "information services" (e.g., current awareness) the remainder providing only passive collection-based services. There was a clear "digital divide" or "information divide" between those libraries well-equipped with ICTs and the others, and between the few that provided any information services and the others. Lack of any formal co-operation forum and lack of CPD provision made this situation worse.

Education and training

As noted above, the lack of formal education in LIS generally, and in health information specifically, and the lack of CPD opportunities, emerged as a significant factor preventing the development and improvement of the health sciences library services. Training in the use of ICTs came across as an important need. This emphasises a point made by others (see, for example, Rehman and Al-Ansari, 2003; Al-Ogla, 1998; Alsereihi, 1998; Marghalani, 1993; Siddiqui, 1996); that LIS educational programmes in Saudi Arabia have little influence or impact upon the work of Saudi librarians and information specialists in general, and health librarians in particular. Specialised training for healthcare library/information staff, recognised as an important factor in their success (Braude, 1997), is particularly lacking in the Saudi situation.

The study also showed that the health professional library users felt a need for training and support in the use of ICTs and digital information resources, confirming the findings of others (AlShaya, 2002; Al-Zaharani, 2002). Very few had received any training or support from library staff, and only half would ask for advice from them. This emphasises the need for library staff themselves to be well-trained and confident with these topics. This is by no means limited to the Saudi situation (see, for example, Maynard, 2002, for a UK equivalent), but it is seen particularly strongly here.

Information services

Usage of the health sciences library by health professionals (physicians, nurses, etc) was for diverse reasons which are commonly found in health organisations.

Predominantly, it is for keeping up-to-date (44%) and dealing with clinical issues (31%), but also for studying, teaching, publishing etc. (It may be noted that there had been virtually no prior studies of healthcare information needs in the Saudi situation.) Fifty-six per cent preferred to use printed materials, while only 39 per cent preferred electronic sources, re-emphasising the “traditional” nature of these library services, especially for some groups of users, especially nurses.

Satisfaction with library services and library staff was generally high; dissatisfaction was noted for provision of electronic resources and ICT systems, and for training provision. Knowledge sharing, among both users and library staff, was very limited, because of both technical factors, and lack of organisational infrastructure and policy.

Information and communication technologies

ICTs were found to be playing an important role in the health sciences libraries, and have the potential to shape a paradigm shift of functions and activities. The libraries studied all provided various ICT facilities and electronic services, though the availability differed between libraries. These included personal computers (PCs), network and Internet access, online catalogues, CD-ROM resources, online databases and electronic journals.

However, there were found to be problems with all of these systems and services, in terms of availability, accessibility, the users' knowledge of the existence of these facilities, and the ability of both users and library staff to use them effectively. Shortages of PCs, for example, forced users, to some extent, to use alternative means such as printed materials, and the majority of respondents indicated that they had no access to hospital computer networks from their homes. The ready availability of the Internet service and the difficulties and obstacles occurring with CD-ROM workstations, OPAC, and electronic databases can be considered as factors in respondents' expressed preference for, and greater use of, the Internet rather than other, arguably more appropriate, information tools.

The high level of expressed dissatisfaction with current ICT facilities, and the adverse impact the shortage of facilities has on information provision, raises questions regarding the future of the information services provided in health science libraries in Riyadh.

Recommendations for improvement

The results of the study, summarised above, show problems in the Saudi health library situation, particularly with reference to the limitations of ICTs, electronic information sources, and proactive information services, with training and CPD, and with strategies and policies for health libraries, especially those that will improve co-operation and networking.

Health professionals are expecting faster access to health information and to be able to share such information with other professional bodies and individuals, but this is clearly not possible in the absence of a health information network. Health libraries would benefit from such a network by providing more convenient, accurate, and up-to-date information to all users. On the other hand, health librarians are not satisfied with the current condition of their libraries and services. They expect development related to various issues concerning health sciences libraries in Riyadh (i.e., co-operation, policy, access to electronic sources, development of information services and information networks). Information networks could create and improve co-operation among health libraries in Saudi Arabia and with other health libraries elsewhere.

Regrettably, the current computing systems in most hospitals do not facilitate access to the health library database and other databases located in some hospitals and research departments. Furthermore, there is a need for information services' development and the need to draw up a clear plan. In addition, there are some problems facing the implementation of ICT, some of which are the lack of training programmes, lack of co-ordination, and poor management. Health sciences libraries need to develop a type of co-operation, which lasts longer, for continuous development attached to formulated policies upon which librarians and users can rely.

The results of the questionnaires and interviews showed that there is strong support for an initiative to provide Saudi Arabian institutions with a National Health Library, a Virtual Health Library, and an Association of Health Information Professionals in the country. Support for these was expressed by both health professionals and health library staff, as being ways of helping to overcome the kind of problems noted above.

As a first step towards accomplishing these aims, the study reported here makes two recommendations: the creation of a model for organisational change and development, applicable to the Saudi health library situation; and the creation of a prototype website for a putative Saudi Health Information Network (SHIN).

Figure 1 shows this as a three-stage process. The first stage, the gathering of information on the current situation of the health science libraries, has been described above, and leads to the second stage, the explicit recognition of the factors and constraints in the change process. This is followed by the development of an appropriate model.

Take in Figure 1. Steps for change and development

The main factors, coming from the results described above, may be summarised as:

- Lack of health information professionals.
- Weakness of libraries and information services.
- Digital/information divide amongst health sciences libraries.
- Information systems implemented are not fully utilised.
- Users' dissatisfaction with current ICT and services in the health sciences libraries.
- Difficulties in accessing electronic information resources and weakness in the printed resources collections.
- Low cooperation among Riyadh hospitals and among health sciences libraries.
- Lack of studies conducted by hospitals to investigate health professionals' information needs.
- Centralised and structured bureaucracy in the management of health sciences libraries.
- Lack of health library staff participation in decision making.
- Slow pace of development.

In order to include these diverse factors within a single useful model, a suitable framework had to be developed. This was based on the Brown University Library Model Organisation Framework (Brown University, 2000). This was derived in order to examine that library's preparedness for adapting to the constant changes impacting on the academic, research and information environments, and allowing all staff to contribute to change management processes. The conceptual model comprises four major elements, referred to as "collaboratives", each focusing on a set of user-centred activities: scholarly resources; learning and curricular resources; access and delivery, and organisational support.

The Brown model was modified and simplified (see Khudair, 2005, for details and rationale) to provide an "Organisational Visionary Model" for the Saudi health library situation, which is shown in Figure 2.

Take in Figure 2. Organisational visionary model for health sciences libraries

This proposed model attempts to represent the main factors in an understandable and usable way. Looking towards the future, health sciences libraries in Riyadh, with the adoption of the organisational visionary model, are expected to move from a traditional organisational structure and modalities towards a continuous spectrum of change. In order to facilitate incorporating technology in the work process, many professional development opportunities should be available. Therefore, predictions should be made to enable the implications of change to be positively managed rather than merely survived; health librarians' participation can effectively manage that change in their own organisations. The environment is characterised by flexibility, collaboration, and interaction across units, with staff and users actively working together to foster an informative and successful environment.

However, the change and development process in health sciences libraries in Riyadh needs to be simplified and presented in such a way that the participants in that change will accept and support the process. The technological infrastructure should make possible the support of a wide variety of options for offering various library and

information services either within hospital buildings or online. Health sciences libraries development in Riyadh should continue to move to online and electronic resources to enhance remote access, meeting the need for resource access in any place and at any time.

The model incorporates a collaborative approach in order to bridge the gap between change decisions and progress in real time. The priority is to participate in changing and improving the current condition of health sciences libraries in Riyadh. This includes management style, advanced technology, improved communication channels, innovation trend, organisational and people development, and teamwork setting. The proposed model attempts to bring together and balance the internal focus of the library staff with an external focus on library users and its mission. It reaffirms the library's traditional mission while proposing changes in how that mission can best be achieved utilising the new technologies and openness to change. The proposed change is to enable hospitals to achieve the libraries' mission of being supportive, responsive to the eminence of healthcare distinguished by its commitment to openness, innovation, and excellence in applying well planned strategies and change practice.

The organisational visionary model is proposed for health sciences libraries in order to solve key issues affecting the health sciences libraries in Riyadh. Also, this is to facilitate the utilisation and implementation of new technologies, for example, the proposed health information network for Saudi Arabia, discussed below.

Saudi Health Information Network (SHIN)

In view of the importance of ICT in the healthcare system, it is very desirable that a network is developed to provide health information sources and services that will satisfy the information needs of health professionals in Saudi Arabia. Such a health information network could also help to identify and locate health information resources and services through the Internet.

The problem facing the health system in Riyadh is that the “body” (the health professional) and “soul” (the health information professional) are not joined as one to form a single entity. As a result of this separation, health professionals spend a great deal of time in information searching, while the health information professional's role is underestimated. To overcome this problem, as a part of this study, there was developed the design of a prototype of a Saudi Health Information Network (SHIN) interface, instantiated as a website (for details, see Khudair, 2005; Khudair and Bawden, 2004).

The proposed service is to offer regularly updated health and scientific articles and publications, and online health guidance relating to patients' particular problems. This network would help health professionals and health information professionals perform effective functions within one setting, which will enhance their information seeking and satisfy their information needs. The proposed network will promote various channels of communication and co-operation in the healthcare environment. Importantly, it will help the healthcare environment to move towards the establishment of a flourishing health information society through popularising the use of electronic resources and highlighting the benefits and advantages of the electronic learning programmes. There will be links to all appropriate health sites which would

be authorised, authenticated and regulated. For example, users might find directories of governmental hospitals, governmental pharmacies, health sciences libraries, and guidance on organising and using personal health libraries. In addition, a web-based health information network prototype could be a key enabler and catalyst for such change in the health profession, because the Internet has the capability to meet changes of this kind.

This prototype has not yet reached the level of real implementation and evaluation, because of time and resource limitations. Future development will be assessed after the network has been launched and tested by users.

Conclusions

The thorough empirical study, used a variety of methods, allowed a rich and reliable understanding of the Saudi healthcare library environment to be developed. Based on this, a visionary organisational model, to support the management of change, was developed, together with the prototype for a Saudi Health Information Network.

Finally, the following specific recommendations could be made.

Recommendations for health professionals

- The electronic information services delivered to health professionals should be developed and improved to enable them to make more efficient use of their time.
- During formal education, health professionals should be provided with opportunities to acquire basic information handling skills.
- Health professionals should be provided with continuing educational programmes which cover their information competencies and keep up with technological advances to maintain their information management skills.
- Advice and training programmes should be conducted using various methodologies, for example: one-to-one, within group, online consultation, live training courses either on site or e-learning.
- Policy makers for the healthcare system in the country should develop and implement policies and strategies to make certain that all health professionals have appropriate access to all forms of health and medical information.
- Be more proactive and assertive in demanding improvement in and development of the current situation of few available resources and inadequate access to needed information.
- Give more consideration to improving ICT skills in order for them to use various types of resources and not be limited to traditional printed materials.

Recommendations for health library/information specialists

- Improve their technical and technological skills to deliver effective information services.
- Develop their professional attitudes and their practice paradigm from a reactive to a proactive stance.
- LIS educational programmes should develop their curriculum to match the demands and challenges of the health information profession.
- Staff members should be developed through a continuous training facility (Continuous Professional Development).

- Hospital management should work together with health information specialists to create and develop an information society in the healthcare environment.
- Should participate in national and international conferences and meetings to discuss various issues related to their profession.
- Establish a national association (The Association of Health Information Professionals).
- Training programme evaluation should be considered in order for hospitals and health sciences libraries to develop their training services.
- A professional qualification in Library and Information Science must be considered as a condition of employment for specialised positions in health libraries.

It is to be hoped that the results of the study reported here (and in more detail in Khudair, 2005) may be of interest and value in countries other than Saudi Arabia, since many of the issues and constraints will be the same.

References

- AbuOuf, S. (1995), *Use of Information Resources by Physicians in Jeddah Hospital Libraries* (Arabic), unpublished MSc dissertation, King AbdulAziz University, Saudi Arabia.
- Al-Ogla, S. (1998), "A study of hospital and medical libraries in Riyadh, Kingdom of Saudi Arabia", *Bulletin on the Medical Libraries Association*, Vol. 86 No. 1, pp. 57-62.
- Alsereihy, H. (1998), "The status of LIS education in Saudi Arabia", *Journal of Education for Library and Information Science*, Vol. 39 No. 4, pp. 334-338.
- Alshaya, A. (2002), *A Study of the Use of Information Sources, With Special Emphasis on CD-ROMs and the Internet, by Saudi Physicians in Major Government Hospitals in Riyadh, Saudi Arabia*, unpublished PhD thesis, University of Wales, Aberystwyth.
- Al-Zahrani, S. (2002), "Use of information and communication technology in Saudi Arabia hospitals", *British Journal of Healthcare Computing and Information Management*, Vol. 19 No. 10, pp. 17-20.
- Arif, M. (1998), "Inter-library loan service in the Kingdom of Saudi Arabia: a case study of medical libraries", *International Information and Library Review*, Vol. 30 No. 4, pp. 341-365.
- Aseel, G. (1996), *Attitudes of Physicians in the City of Jeddah towards the Use of Medline Databases on CD-ROM* (Arabic), unpublished MSc dissertation, King AbdulAziz University, Saudi Arabia.
- Braude, R. (1997), "On the origin of species: evolution of health sciences librarianship", *Bulletin of the Medical Libraries Association*, Vol. 85 No. 1, pp. 1-10.
- Brown University (2000), *Managing Organizational Development through Effective Leadership: the Model Program*, available from:
http://www.brown.edu/Facilities/University_Library [last accessed 28 May 2007].

- Khudair, A. (2005), *Health Sciences Libraries: Information Services and ICTs*, unpublished PhD thesis, Department of Information Science, City University London.
- Khudair, A. and Bawden, D. (2004), "Saudi Health Information Network (SHIN): a proposed prototype", *Fourth Regional Conference on EMR Health Sciences Virtual Library: Role in e-learning and Building the Information Society*, Cairo, World Health Organisation, Regional Office for the Eastern Mediterranean.
- Marghalani, M. (1993), "Continuing education for librarians and information specialists in Saudi Arabia", in Woolls, B. (Ed.), *Continuing Professional Education and IFLA: Past, Present and a Vision for the Future*, K.G. Saur, Munchen.
- Maynard, S. (2002), "The knowledge workout for health: a report of a training needs census of NHS library staff", *Journal of Librarianship and Information Science*, Vol. 34 No. 1, pp. 17-32.
- Rehman, S. and Al-Ansari, H. (2003), "The digital marketplace and library and information education in the GCC member nations: a critical review", *Library Review*, Vol. 52 No. 4, pp. 170-179.
- Sewell, M. (2002), *The Use of Qualitative Interviews in Evaluation*, University of Arizona, available at: <http://www.ag.arizona.edu/fcs/cyfernet/cyfar/Intervu5.htm> [last accessed 28 May 2007].
- Siddiqui, M. (1996), "Library and information sciences education in Saudi Arabia", *Education for Information*, Vol. 14 No. 3, pp. 195-214.

Received

Revised

Accepted

Figure 1. Steps for change and development



Figure 2. Organisational visionary model for health sciences libraries

